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Search History

DATE: Wednesday, April 21, 2004 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
DB=USPT; PLUR=YES; OP=OR			
L42	5212787.pn.	1	L42
L41	5212787.pn.	1	L41
L40	5235701.pn.	1	L40
L39	5295261.pn.	1	L39
L38	5421015.pn.	1	L38
L37	4679094.pn.	1	L37
L36	5426780.pn.	1	L36
L35	5426780.pn.	1	L35
L34	5437027.pn.	1	L34
L33	5615362.pn.	1	L33
L32	5765159.pn.	1	L32
L31	5799309.pn.	1	L31
L30	5873093.pn.	1	L30
DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR			
L29	l7 and l28	51	L29

L28	707.clas.	19998	L28
L27	707/103r	1275	L27
L26	707/102	4426	L26
L25	707/10	8166	L25
L24	707/4	3542	L24
L23	707/3	6165	L23
L22	707/2	3785	L22
L21	707/1	6283	L21
L20	5907847.uref.	6	L20
L19	5907847.pn.	2	L19
DB=USPT; PLUR=YES; OP=OR			
L18	5359721.pn.	1	L18
L17	5369766.pn.	1	L17
L16	5371891.pn.	1	L16
L15	5418964.pn.	1	L15
L14	5423841.pn.	1	L14
L13	5437025.pn.	1	L13
L12	5485671.pn.	1	L12
L11	5515536.pn.	1	L11
L10	5619638.pn.	1	L10
L9	5619638.pn.	1	L9
L8	5566349.pn.	1	L8
DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR			
L7	L6 and rows	92	L7
L6	L5 and tables	107	L6
L5	L4 and (object near identif$ or object near id)	107	L5
L4	L3 and (database or data with base) near server	188	L4
L3	L2 and (metadata or meta with data)	382	L3
L2	L1 and relation$ near (database or data with base)	1478	L2
L1	(object-oriented or object near oriented) near (database or data with base)	2496	L1

END OF SEARCH HISTORY

L7: Entry 89 of 92 File: USPT Oct 19, 1999

DOCUMENT-IDENTIFIER: US 5968115 A
TITLE: Complementary concurrent cooperative multi-processing multi-tasking processing system (C3M2)

Abstract Text (1):
The system concept of the C3M2 System is to have the capability of providing a Process for each major processing step of automated data processing, i.e. if you have four steps then you need a minimum of four but it could be 8 or 12 or 16 processes. The four major complementary functions encompass the four major functions of data processing (Input/Output, Data Computation, Storage and User I/F). The system shall be Multi-tasking for each step. Source headers, link lists and entity or object identifiers are the methods that shall be used for identity of the different classes, types and objects for the variety of data in the system. The source and data type are contained in the source header. The class and type identity are contained in the object identifiers. The multi-tasking would be by schedule (interleaved by priority). This was selected instead of cycle sharing for improved concurrency.

Detailed Description Text (18):
Memory Management: Memory allocations made during the planning phase for all memory users. Memory segments are divided into 1/1024 segments of dedicated total active memory. The data archive memory occupies the majority of the memory and is in a Relational Database Format. The other memory segments provide the required memory storage elements of the Complementary processing's, systems Software and utilities. Each Processes writes to its memory, Load/Locked. Other processes Read or Exchange. The memory also serves as an interface between the Processes. The memory is identified as the Congruent Memory (CM).

Detailed Description Text (22):
Object: In Structured query language, anything that can be created, accessed or manipulated with Structured query language statements, such as databases, tables, records, views or indexes.

Detailed Description Text (42):
One of the features of a preferred embodiment of the invention is the storage of data in a relational database for fast retrieval and response. This functionality is provided by the DS process 40. A DS CSM is preferably operably associated with the DS process. An archive memory 5.4 is provided for storing data for archive from the DS process. The DS instructions and means for causing the DS process to retrieve data from IO memory 5.1, 5.2, 5.6 causes the DS process to retrieve such data into the DS CSM. The DS instructions further include a routine to retrieve dynamic data from the DS CSM, a routine to retrieve static data from the DS CSM, a routine to retrieve calculated data from the DS CSM, and a routine to retrieve the identifiers for the dynamic data, the static data, and the calculated data from the DS CSM. The identifiers are converted to record numbers by a routine in the DS instructions. The DS instructions further include a routine to convert the dynamic data, the static data, the calculated data and the record numbers to a relational data base format for storage as a relational data base in the DS memory and a routine for storing the relational data base in the DS memory. To provide long term storage and accessibility of information in the long term storage, the DS

instructions further include a routine for retrieving the relational data base from the DS memory, a routine for storing the thus retrieved relational data base in the archive memory, a routine for transferring the relational data base from the archive memory to an archive media for storage, and a routine for transferring a relational data base from an archive media to the archive memory.

Detailed Description Text (50):
To prepare for setting up the relational database, the IO process identifies the dynamic data and the static data and transfers the dynamic data as IO output to a first portion of the IO memory for storage and the static data as IO output to a second portion of the IO memory for storage. The multicharacteristic identifiers are transferred as IO output to a third portion of the IO memory for storage. The DS process completes setting up the relational database. An IO memory output is retrieved from the first portion of the IO memory, the second portion of the IO memory, and the third portion of the IO memory. The retrieved IO memory outputs are received by the DS process. The received IO memory outputs are reformatted in the DS process which produces a reformatted DS output. The reformatted DS output is transferred to the DS memory for storage.

Detailed Description Text (52):
The system concept of the C3M2 System is to have the capability of providing a Process for each major processing step of automated data processing, i.e. if you have four steps then you need a minimum of four processes but it could be 8 or 12 or 16 processes. The system shall be Multi-tasking for each step. Source headers, link lists and entity or object identifiers are the methods that shall be used for identity of the different classes, types and objects for the variety of data in the system. The source and data type are contained in the source header. The class and type identity are contained in the object identifiers. The multi-tasking would be by schedule (interleaved by priority). This was selected instead of cycle sharing for improved concurrency.

Detailed Description Text (54):
Data records for use by the system are Relational Database (RDB) formats for the entities, objects and attributes in a Flat File. The Flat File is defined as an array of data records. The files are by classes of system elements. The RDB files to reside in the Congruent Memory (CM) for Real Time access and are stored in the Archive Media (AM) on a cyclic basis that is determined in the planning phase. The latency time for access of the AM will be in the millisecond range. The cyclic time for exchange of data from the CM to the AM would be in the Hours-Type time period. Data files for making up the Object data records are initial or identity Data, Calculated Data for object performance & etc., Reference Data from the External Data base managers and Knowledgebase, Link List and Data Source data for each record. The entire record then becomes a part of the individual records for each object file number for the Real Time Archive data set.

Detailed Description Text (64):
The block diagram of the C3M2 system processes is shown by FIG. 13, C3M2 Software System Processes. The system design envisions any number of bridges from the Fiber Optic Interfaces to External Users. Data to be communicated to the IO (1.0) include all position data and external data from databases and other external resources. The IO will transform any required external data to a standard protocol and format for use in the C3M2 System. The IO shall then store the data in the Position Database (5.1) of the Congruent Memory (5.0). The data shall be stored in the record or object format and the IO shall update its associated Link List. The DP (2.0) shall access the Congruent Memory when data is available. Data availability is conveyed by the Link List. External data shall be accessed by the IO (1.2) and it's data shall be stored in the External Data Database (5.2) and the IO shall update it's Link List. The DP (2.1) shall provide data to the Knowledgebase (2.2) for Objects and their attributes and receive identity or support data in return. The processed data will be stored in the Calculated Data Database (5.3) by the DP.

The DP shall also update the Link List of the calculated Data Database. The DS (4.0) shall control all archive data in the Congruent Memory and Archive Data Database (5.4). The Data storage Process shall transfer data from the Position Data (5.1), Calculated Data (5.2), and External Data (5.3) to the Archive Database (5.4) on a cyclic basis. The archive data to be real-time, critical-time and historical data. The Real Time DM (3.0) shall provide the User interfaces to the C3M2 system, support all display systems (3.1), User Queries (3.2), User Work Stations and Database Servers.

Detailed Description Text (65):
The IO (1.0) is the interface to all outside interfaces, Comm Lines and other Processing Nodes. Resident Data in the IO shall be the interfacing formats and control methodology for each external interface. Intrasystem interfaces for the IO include the Real Time DM and the Congruent Memory. Resident data for the intra-system interfaces include instructions for the Real Time DM and the dedicated memory locations (Record and Link List) for each record of each external interface. Link List and Look-Up Table locations for all dedicated intra-system interfaces are resident in the IO and the Congruent Memory. The Control Flow Diagram (CFD) is shown by FIGS. 14.1 (Input) and 14.2 (Query), C3M2 Control Flow Diagrams for the IO. Associated with the CFD is one or more Input Function/Process Output (IFPO) table listing Inputs, functions performed by the process and the processing required for each section of the CFD.

Detailed Description Text (66):
The IFPO for the 10 Processes are shown by Table 4-1.1 (Input) and 4-1.2 (Query) IO (Input/output) Requirements.

Detailed Description Text (69):
The IFPO for the DP is shown by Table 4-2.

Detailed Description Text (72):
The IFPO's for the Real Time DM are shown in Table 4-3.1 for User Data and 4-3.2 for Query Data.

Detailed Description Text (75):
The IFPO for the Data storage is Table 4-4, Data Storage Requirements.

Detailed Description Text (76):
The processing steps for the Control flow diagram, FIG. 17, are contained in the processing section of Table 4-4. The initial Data Dictionary and Structure of the Data Records shall be completed and documented from User Procedures and Standards and from documents provided by associated sources. The Data storage shall have IO Link List and pointer address information for all Data storage applications and data files. The process shall control and schedule all external request for data, monitor and record all data inputs, record all requests for data, verify that the data requestor is authorized and provide an audit trail for all data access requests.

Detailed Description Text (170):
Expressiveness of DML--The C3M2 system shall include a DML that allows users to easily isolate various subsets of the data held in a database. The DML shall provide for data representing multiple tables (or record types, or object types) to be meaningfully joined in a retrieval transaction.

Detailed Description Text (184):
Access to metadata--The C3M2 system shall maintain the integrity of its database by prohibiting operations that would corrupt the system, e.g. certain updates to metadata.

Detailed Description Text (193):

Fragmentation transparency--The C3M2 system shall access data in a distributed database system (DDMS) that is partitioned across multiple, interconnected systems. Horizontal fragmentation occurs when the rows of a table are distributed across multiple sites, and vertical fragmentation occurs when the columns are distributed. To the end user and the application programmer, fragmentation is transparent.

Detailed Description Text (194):
Replication transparency--The C3M2 system shall enable the data in the distributed database system to be replicated at the fragment level. This means that tables, as well as horizontal and vertical fragment of tables, can be replicated. To the end user and the application programmer, the replication is transparent; distributed queries and transactions can be formulated as if the data were not replicated.

Detailed Description Text (236):
Persistent objects--The C3M2 system shall provide database management support in accordance with the concept of Object Oriented Database Management (OODM).

Detailed Description Text (237):
Object identifiers (OID)--The C3M2 system shall provide the capability to associate OID's with objects and the capability to establish a relationship between objects by reference to an OID.

Detailed Description Text (255):
For Military use, the storage areas could be Object Data, Calculated Data, External Data, Archive Data, Link List and Count of Records. The IO writes to Object Data and External Data, the DP to Calculated Data and the DS to Archive Data. The CM Archive Data File has the attributes of a RDB. The uses of the memory is controlled by a "Link List" and Record Count does not require a "Locked" or "Un-Locked" condition. A method of assigning addresses to a Link List for Input Data is shown by FIG. 9, Link List for Input Track Data. The data is stored in the IO memory as the data arrives. A track or data record number is assigned or is identified by the IO. The Track ID number is assigned to each data record as it is stored (1). The record number is also stored on the Link List for each Track or object Id (Track & Object are interchangeable), i.e. No. (2) and (3). The records for each track numbers are also stored in the Archived Memory (CM) and Archive Media by track number in sequential time stamped locations. The track or object records are also stored in sequential order. This allows easy direct access to the individual track and data records and their attributes.

Detailed Description Text (273):
17. The KB will attempt to identify the Object or Track depending on its attributes and the reference data obtained from external sources. The external sources could include signature data for the attributes.

Detailed Description Paragraph Table (1):
TABLE 4-1.1

INPUT/OUTPUT (IO) Requirements (Input)	INPUT FUNCTION/PROCESS	OUTPUT (IFPO) (Baseline IO Requirements) Inputs	Functions	Outputs
A. Surface Craft - 50 inputs. 1. Receive samples (Range and Bearing) & Classify 1. 3 Store Reference data as applicable, Samples every 20 Seconds, from Surface Craft Speed < 50 Knots. store sample data once/minute in Range and Bearing. 2. Receive data from external reference sources common memory 3. Store sample and rederence data in memory. 1. 4 Update Link List when Store External Reference Data 4. Construct a link list for records in memory completed. B. Special Vehicles 50 inputs. 1. Receive samples (Range, Bearing & Elev.) 1. 3 Store Reference data as applicable, Samples ever 4 seconds, Classify from SP Vehicle. Speed < 250 Knots. store sample data once/20 Seconds Range, Elev. & Bearing 2. Receive data from external reference sources in common memory 250 Knots Max. 3. Store sample and				

reference data in memory 1. 4 Update Link List when Store External Reference Data 4. Construct a link list for records in memory completed. C. Aircraft - 100 inputs, samples 1. Receive samples (Range, Bearing, Elev. & Rl) 1. 3 Store Reference data as applicable, every 0.5 seconds, Range, Classify from Aircraft. Speed > 250 Knots. store sample data once/2 Seconds bearing. elev. & refractice 2. Receive data from external reference sources in common memory index - if avail. 3. Store sample and reference data in memory 1. 4 Update Link List when Store External Reference Data 4. Construct a link list for records in memory completed. D. Short Range Missiles 1. Receive samples (Range, Bearing, Elev. & Rl) 1. 3 Store Reference data as applicable, 25-inputs-Samples every . Classify from Short Range Missile. Speed > 2500 store sample data once/1 Seconds 25 Second, Range, 2. Receive data from external reference sources In common memory Bearing, Elevation, Retrac- 3. Store sample and reference data in memeory 1. 4 Update Link List when Store ion index, 3000 Knots Mx 4. Construct a link list for records in memory completed. E. Long Range Missiles 1. Receive samples (Range, Bearing, Elev. & Rl) 1. 3 Store Reference data as applicable, 10-inputs Samples every . Classify from LRM's. Speed > 6000 Knots. store sample data once/0.5 Seconds 0.1 Second, Range, 2. Receive data from external reference eources in common memory Bearing, Elevation, Refrac- 3. Store sample and reference data in memeory 1. 4 Update Link List when Store tion index, 6000 Knots Mx 4. Construct a link list for records in memory completed.

Processing 1.1.1 Receive Data and Classity (1.1.1) a. Retrieve the sampled dynamic data from the External Interface (600). b. Identify each data sample from the communications header as to its Source, Class, Type and Object. c. Provide Priority and schedule for each data sample during current time frame. d. Retrieve static data from the External I/F (600). e. Identifies the static data from the communications header for data source, database, query No., data records, date validated, and time stamp 1.1.2 Construct a Link List (1.1.2) a. Provide Dynamic data to the Object Link List (5.1), Includes Record No., time stamp, and updated data Flag. b. Provide data for the Static Data Link List and includes the Static Record No., Database name, Time stamp, Source, Class, Type, Object and update data Flag. 1.1.3 Store Data (1.1.3) a. Provide outputs of Dynamic data to the IO dedicated Object memory and set the updated data Flag. b. Stores the Static data in the EXT dedicated memory (5.2) for external data from databases and external sources, set the data update Flag. c. Stores Link List data in the L/L dedicated memory (5.6), set the data update Flag.

Detailed Description Paragraph Table (2):
TABLE 4-1.2

Input/Output (I) Requirements (Query) INPUT FUNCTION/PROCESS OUTPUT (IFPO) (Baseline IO Requirenments) Inputs Functions Outputs

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A. Surface Craft 1. Interfaces with External interfaces (Safenet). 1. External User Query Request. Queries to RDA's or DDMS 2. Provides interface compatability for all 2.eries. CRDB User Query to DDMS. Queries from RDA or DDMS 3. Provided I/O data storage for Ref. & Query 3.ta. External Reference Data as queried Refer. data from/to DDMS's 4. Provides the IO.sub.-- Process & DM.sub.-- Process interface. by CRDB Users. Queries from C3M2 Users B. Special Vehicles 1. Interfaces with External interfaces (Safenet). 1. External User Query Request. Queries to RDA's or DDMS 2. Provides interface compatability for all 2.eries. CRDB User Query to DDMS. Queries from RDA or DDMS 3. Provided I/O data storage for Ref. & Query 3.ta. External Reference Data as queried Refer. data from/to DDMS's 4. Provides the IO.sub.-- Process & DM.sub.-- Process interface. by CRDB Users. Queries from C3M2 Users C. Aircraft - 100 inputs, samples 1. Interfaces with External interfaces (Safenet). 1. External User Query Request. Queries to RDA's or DDMS 2. Provides interface compatability for all 2.eries. CRDB User Query to DDMS. Queries from RDA or DDMS 3. Provided I/O data storage for Ref. & Query 3.ta. External Reference Data as queried Refer. data from/to DDMS's 4. Provides the IO.sub.-- Process & DM.sub.-- Process interface. by CRDB Users. Queries from C3M2 Users D. Short Range Missiles 1.

Inferfaces with External interfaces (Safenet). 1. External User Query Request. Queries to RDA's or DDMS 2. Provides interface compatability for all 2.eries. CRDB User Query to DDMS. Queries from RDA or DDMS 3. Provided I/O data storage for Ref. & Query 3.ta. External Reference Data as queried Refer. data from/to DDMS's 4. Provides the IO.sub.-- Process & DM.sub.-- Process interface. by CRDB Users. Queries from C3M2 Users E. Lcng Range Missiles 1. Interfaces with External interfaces (Safenet). 1. External User Query Request. Queries to RDA's or DDMS 2. Provides interface compatabiiity for all 2.eries. CRDB User Query to DDMS. Queries from RDA or DDMS 3. Provided I/O data storage for Ref. & Query 3.ta. External Reference Data as queried Refer. data from/to DDMS's 4. Provides the IO.sub.-- Process & DM.sub.-- Process interface. by CRDB Users. Queries from C3M2 Users

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Processing 1.2.1 Receive and Tranmits Queries (1.2.1) a. Retrieves Query inputs from the External I/F (external DDMS). b. Transfers Query data to Query identity (1.2.2). c. Receives data from the Query Request (1.2.3), formats and transfers to the desired External User. d. Received Query Data from Query Data Store (1.2.4), formats and transfe the data to the requesting External User. 1.2.2 Query identity (1.2.2) a. Provides identity of External Data Queries using the Message Headers for Source, Class, Types, Objects & Time Stamps. b. Transfers the Query request tot the DM Process (3.0). 1.2.3 Query Request (1.2.3) a. Receives Query Request from the DM.sub.-- Process (3.0). b. Provides the properly formatted query (includes Communications Header) for transfer to the correct External User. 1.2.4 Query Data Store (1.2.4) a. The IO.sub.-- Process provides interim storage for the Query data provided by the DM Procees (30). b. The IO.sub.-- Process provides format and message heading information for the requested Query Data, as requested by External authorized Users.

Detailed Description Paragraph Table (3):
TABLE 4-2

Data Processing (DP) Requirments INPUT FUNCTION/PROCESS OUTPUT (IFPO) (Baseline Data Processing Requirements) Inputs Functions Outputs

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A. Surface Craft 1. Scan the Link List and process the next 1.cord. Transfer derived data of first 1. Range and Bearing 2. Convert Range and Bearing to X, Y, Z. data to KB. 2. Data from external 3. Process the algorithms required for the 2.cord. Transfer Dynamic Calculated Reference data 4 Reset the status bit(s) indicating the DP Data to Concurrent Memory 3. Link List maintained process is completed. 3. Update Link List by IO Process 5. Maintain a count of the number of records. 4. Update Data Record Count 4. Ref. data from KB B. Special Vehicles 1. Scan the Link List and process the next 1.cord. Transfer derived data of first 1. Range and Bearing 2. Convert Range and Bearing to X, Y, Z. data to KB. 2. Data from external 3. Process the algorithms required for the 2.cord. Transfer Dynamic Calcuiated Reference data 4 Reset the status bit(s) indicating the DP Data to Concurrent Memory 3. Link List maintained is completed. 3. Update Link List by IO Process 5. Maintain a count of the number of records. 4. Update Data Record Count 4. Ref. data from KB C. Aircraft 1. Scan the Link List and process the next 1.cord. Transfer derived data of first 1. Range and Bearing 2. Convert Range and Bearing to X Y, Z. data to KB. 2. Data from external 3. Process the algorithms required for the 2.cord. Transfer Dynamic Calculated Reference data 4 Reset the status bit(s) indicating the DP Data to Concurrent Memory 3. Link List maintained process is completed. 3. Update Link List by IO Process 5. Maintain a count of the number of records. 4. Update Data Record Count 4. Ref. data from KB D. Short Range Missiles 1. Scan the Link List and process the next 1.cord. Transfer derived data of first 1. Range and Bearing 2. Convert Range and Bearing to X, Y, Z. data to KB. 2. Data from external 3. Process the algorithms required for the 2.cord. Transfer Dynamic Calculated Reference data 4 Reset the status bit(s) indicating the DP Data to Concurrent Memory 3. Link List maintained process is completed. 3. Update Link List by IO Process 5. Maintain a count of the number of records. 4. Update Data Record Count 4. Ref. data from KB E. Long Range Missiles 1. Scan the Link List and process

the next 1.cord. Transfer derived data of first 1. Range and Bearing 2. Convert Range and Bearing to X, Y, Z. data to KB. 2. Data from external 3. Process the algorithms required for the 2.cord. Transfer Dynamic Calculated Reference data 4 Reset the status bit(s) indicating the DP Data to Concurrent Memory 3. Link List maintained process is completed. 3. Update Link List by IO Process 5. Maintain a count of the number of records. 4. Update Data Record Count 4. Ref. data from KB

Processing 1. Next Record for Processing (2.1) a. Scan Data Ready Flags in OBJ Memory (5.1). b. Provide Next Record No. by Priority and Schedule to "Get Current Record" Module (2.2). 2. Get Current Record (2.2) a. Retrieve the Next Recod from the OBJ Memory (5.1). 3. Get Prior Record (2.3) a. Provide Prior Object Data Value and Time Stamp from OBJ Memory (5.1) t Calculation Module (2.4). 4. Calculations (2.4) a. Compare current value with Prior Value plus Trend Value; if equal then processing is not required. b. If processing is required then complete the process, each class and type has its own process. c. If object idenity or Decision Support is required; forward the Object Type and its attributes to KB. d. Retrieve Decisioin Data from the KB. e. Store Calculated Data and Decision Data in Calculated Data Database (5.3).

Detailed Description Paragraph Table (4):
TABLE 4-3.1

DATE
MEMORY (DM) Requirements (User Date) INPUT FUNCTION/PROCESS OUTPUT (IFPO) (Baseline DM Requirements-User Data) Inputs Functions Outputs

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A.
Surface Craft 1. Sample the desired real-time track data in the 1. Provide required Alarms and Real-Time Track Data in 2. Forward any Alarm or Critical info to the info to the required Users and Congruent Memory (CM) Users and display the info on required displays displays 3. Provide the selected displays for all users 2.d Initialize and update al displays displays and maintain the updates of the requested by the users. with the current applicable data. Updates to be on a cyclic basis, using current real-time data. B. SP Vehlcies 1. Sample the desired real-time track data in the 1. Provide required Alarms and Real-Time Track Data in 2. Forward any Alarm or Criticai info to the info to the required Users and Congruent Memory (CM) Users and display the info on required displays. displays 3. Provide the selected displays for all users 2.d Initialize and update al displays displays and maintain the updates of the requested by the users. with the current applicable data. Updates to be on a cyclic basis, using current real-time data. C. Aircraft 1. Sample the desired real-time track data in the 1. Provide required Alarms and Real-Time Track Data in 2. Forward any Alarm or Critical info to the into to the required Users and Congruent Memory (CM) Users and display the info on required displays displays 3. Provide the selected displays for all users 2.d Initialize and update al displays displays and maintain the updates of the requested by the users. with the current applicable data. Updates to be on a cyclic basis, using current real-time data. D. Short Range Misslie 1. Sample the desired real-time track data in the 1. Provide required Alarms and Real-Time Track Data in 2. Forward any Alarm or Critical info to the into to the required Users and Congruent Memory (CM) Users and display the info on required displays displays 3. Provide the selected displays for all users 2.d Initialize and update al displays displays and maintain the updates of the requested by the users. with the current applicable data. Updates to be on a cyclic basis, using current real-time data. E. Long Range Missile 1. Sample the desired real-time track data in the 1. Provide required Alarms and Real-Time Track Data in 2. Forward any Alarm or Critical info to the info to the required Users and Congruent Memory (CM) Users and display the info on required displays displays 3. Provide the selected displays for all users 2.d Initiaiize and update al display displays and maintain the updates of the requested by the users. with the current applicable data. Updates to be on a cyclic basis, using current real-time data.

Processing: 1. Process User Data (3.2.1) a. Retrieve the updated Record No. of the

R/L Memory (5.7) and reset the Update Flag of the Record Link List. b. Retrieve the Archieve Record data from the Archieve memory. c. Format the data to the Users requirement. d. Transfer the data to temporary storage for Users Updated Data (3.1.3). e. Retrieve Priority data from the R/L Memory (5.7) and reset the Priorit Flag. f. Formats the Alarm, Alert or Trigger Mesaages and transfers to the User Priotity Data Module (3.1.2). 2. User Priority Data (3.1.2) a. Provides temporary storage for Priority, Triggers, Alarms and Notices data. b. Notifies Transfer Module (3.2.1) that Priotity Data is available and sets Priority Flag. 3. User Record Data (3.12.3) a. Provides temporary data storage for data records and record updates. b. Notifies Transfer Module (3.2.4) that record data is available and set Data Record Flag. 4. Transfer Data (3.1.4) a. Retrieves record data from temporary storage and resets the Data Recor Flag. b. Retrieves the Priority Data from temporary storage and resets the Priority Flag. c. Transfers the received information to the Users interface (300) on a priority and schedule basis.

Detailed Description Paragraph Table (5):
TABLE 4-3.2

MEMORY (DM) Requirements (Query Data)	INPUT FUNCTION/PROCESS	OUTPUT (IFPO)	DATA (DM Requriements - Query)
Inputs	Functions	Outputs	
A. Surface Craft 1. User Query request consisting of Track ID & 1.me All track or query data, with each User query, i.e. consisting of Track period or other queries that correspond to record or set of data furnished in a number the Start and Stop Time. 2. Access the Link List for Track or other Query FIFO sequence. Archived track data file, CM or requested by the User. archive media or both, and the 3. Scan the Link List for the Record numbers and/or Link List for each track.. columns corresponding to the time intervals or data requested by the user. 4. Retrieve all selected data queried by the User. B. Special Vehicle 1. User Query request consisting of Track ID & 1.me All track or query data, with each User query, i.e. consisting of Track period or other queries that correspond to record or set of data furnished in a number the Start and Stop Time. 2. Access the Link List for Track or other Quiery FIFO sequence. Archived track data file, CM or requested by the User. archive media or both, and the 3. Scan the Link List for the Record numbers and/or Link List for each track.. columns corresponding to the time intervals or data requested by the user. 4. Retrieve all selected data queried by the User. C. Aircraft 1. User Query request consisting of Track ID & 1.me All track or query data, with each User query, i.e. consisting of Track period or other queries that correspond to record or set of data furnished in a number the Start and Stop Time. 2. Access the Link List for Track or other Query FIFO sequence. Archived track data file, CM or requested by the User. archive media or both, and the 3. Scan the Link List for the Record numbers and/or Link List for each track.. columns corresponding to the time intervals or data requested by the user. 4. Retrieve all selected data queried by the User. D. Short Range Missile 1. User Query request consisting of Track ID & 1.me All track or query data. with each User query. i.e. consisting of Track period or other queries that correspond to record or set of data furnished in a number the Start and Stop Time. 2. Access the Link List for Track or other Quiery FIFO sequence. Archived track data file, CM or requested by the User. archive media or both, and the 3. Scan the Link List for the Record numbers and/or Link List for each track.. columns corresponding to the time intervals or data requested by the user. 4. Retrieve all selected data queried by the User. E. Long Range Missile 1. User Query request consisting of Track ID & 1.me All track or query data, with each User query. i.e. consisting of Track period or other queries that correspond to record or set of data furnished in a number the Start and Stop Time. 2. Access the Link List for Track or other Quiery FIFO sequence. Archived track data file, CM or requested by the User. archive media or both, and the 3. Scan the Link List for the Record numbers and/or Link List for each track.. columns corresponding to the time intervals or data requested by the user. 4. Retrieve all selected data queried by the			User.

Processing: 1. User Query (3.2.1) a. Retrive User Query from the User interface (300) b. Process the query for proper Format, ID, and transfer to the Access Query Data Module (3.2.2) 2.Access Query Data (3.2.2) a. Accesses Record Link List (5.7) for Query Data Record Numbers. b. Retrieves Query records from the Archive memory (5.4). c. Transfers the Query records to the Transfer Module (3.2.3). 3. Transfer Module (3.2.3) a. Provides temporary storage for the Query record data. b. Transfers the Query records to the User interface (300) on a cyclic scheduled basis.

Detailed Description Paragraph Table (6):
TABLE 4-4

Data Storage (DS) Requirements INPUT FUNCTION/PROCESS OUTPUT (IFPO) (Baseline DS Requirements) Inputs Functions Outputs

A. Surface Craft 1. Montiors the real-time object or track data in 1.e Real-time Alarms, Alerts, and Real-time track or object data Concurrent Memory & their Record Numbers information Messages, to Concurrent Memory 2. Provides any alarm or data information 2.sages Real-time displays and reports Record Numbers the Users or Query Users. for On-Une Users. 3. Initialize and update displays and reports for the On-Line Users. B. SP Vehicles 1. Montiors the real-time object or track data in 1.e Real-time Alarms, Alerts, and Real-time track or object data Concurrent Memory & their Record Numbers information Messages, to Concurrent Memory 2. Provides any alarm or data information 2.sages Real-time displays and reports Record Numbers the Users or Query Users. for On-Line Users. 3. lnitialize and update displays and reports for 3.e Real-time Archive to Archive On-Line Users. Media C. Aircraft 1. Montiors the real-time object or track data in 1.e Real-time Alarms, Alerts, and Real-time track or object data Concurrent Memory & their Record Numbers information Messages, to Concurrent Memory 2. Provides any alarm or data information 2.sages Real-time displays and reports Record Numbers the Users or Query Users. for On-Line Users. 3. Initialize and update displays and reports for 3.e Real-time Archive to Archive On-Line Users. Media D. Short Range Missiles 1. Montiors the real-time object or track data in 1.e Real-time Alarms, Alerts, and Real-time track or object data Concurrent Memory & their Record Numbers information, Messages. to Concurrent Memory 2. Provides any alarm or data information 2.sages Real-time displays and reports Record Numbers the Users or Query Users. for On-Line Users. 3. Initiaiize and update displays and reports for 3.e Real-time Archive to Archive On-Line Users. Media E. Long Range Missile 1. Montiors the real-time object or track data in 1.e Real-time Alarms, Alerts, and Real-time track or object data Concurrent Memory & their Record Numbers information Messages, to Concurrent Memory 2. Provides any alarm or data information 2.sages Real-time displays and reports Record Numbers the Users or Query Users. for On-Line Users. 3. Initialize and update displays and reports for 3.e Real-time Archive to Archive On-Line Users. Media

Processing: 1. Record Count in Archive Media (4.1) a. Retrieve the updated Data Object data list for Object Records and rese the updated data Flag. b. Transfer the updated Record No.'s to the Access Data in Memory (4.2) Module. 2. Access Data in Memory Module (4.2) a. Retrieve the Object Data Records from the Object Data Memory (5.1). b. Retrieve the Calculated Data Records from the Calculated Data Memory (5.3). c. Format the data into the prescribed RDB format for the Class, Type and Object. d. Transfer the RDB format records to the Transfer Records Module (4.3). 3. Transfer Records (4.3) a. Assigns sequential record numbers to each record for each class and type. b. Transfers the last updated RDB Records to the Archive Memory Database (5.4). 4. Transfer Records Between Archive Media (4.4) a. Processes Transfer Trigger from DM (30). b. Transfer the prescribed number of records from the Archive Memory Database (5.4) to the Archive Media (400). c. Processes Retrieve Trigger from DM (30). d. Transfers the prescribed number of records from the Archive Media (400 to the Archive Memory (5.4).

Other Reference Publication (3):

Arthur, Lowell Jay, Improving Software Quality, 1993, Table of Contents.

Other Reference Publication (6):
Booch, Grady, Object Oriented Design With Applications, 1991, Table Content.

Other Reference Publication (7):
Connell et al, Structured Rapid Proto Typing, 1989, Table of Contents.

Other Reference Publication (8):
Yourdan, Edward, Decline and Fall of the American Programmer, 1992 Table Content.